Battaglia, Frank

From: Aaron Ting <ating@aeiconsultants.com>
Sent: Friday, September 08, 2017 10:43 AM
To: Rick Kowalski; Battaglia, Frank; Tisa, Kimberly; kelly.owens.dem.ri.gov; Crawford, Jeffrey (DEM)
Cc: Joseph F Guarnaccia; Barbara Hicks; Stephen Graham
Subject: RE: Former Ciba-Geigy, Lot 1102, 180 Mill Street, Cranston, RI

Hello all:

The files are all uploaded to the link provided below.

Regards,

Aaron Ting
Project Engineer/Project Manager
AEI Consultants
Mobile: 978.577.7138

From: Rick Kowalski
Sent: Friday, September 08, 2017 8:50 AM
To: Battaglia, Frank <battaglia.frank@epa.gov>; Tisa.Kimberly@epa.gov; Owens, Kelly (DEM) <kelly.owens@dem.ri.gov>; Crawford, Jeffrey (DEM) <jeff.crawford@dem.ri.gov>
Cc: Joseph F Guarnaccia <joseph.guarnaccia@basf.com>; Barbara Hicks <barbara.hicks@partners.basf.com>; Stephen Graham <sgraham@aeiconsultants.com>; Aaron Ting <ating@aeiconsultants.com>
Subject: Former Ciba-Geigy, Lot 1102, 180 Mill Street, Cranston, RI

Frank, Kim, Kelly and Jeff:

On behalf of BASF, please find a link below to a ftp site which will contain the electronic files for the Cranston, Rhode Island, 180 Mill Street, Lot 1102 remediation project design document by noon today for your review. I'm sending this early since this I won't be able to later today. Aaron Ting will send a follow-up message to confirm when all the files have been uploaded.

https://aeiconsultants.sharefile.com/d-s8ee85cf2d674212b

The file folder system includes:

- Corrective Measures Implementation (CMI) Work Plan
  - CMI WP text, figures and tables
- CMI WP Appendices
  - Appendix A – Test Pitting Memo (dated 5-12-2017)
  - Appendix B – Groundwater Sampling Memo (dated 5-18-2017)
  - Appendix C – RA/CSM/Preliminary Design Memo (dated 7-13-2017)
  - Appendix D – Human Health Risk Evaluation
  - Appendix E – Final Design Documents
    - Technical Specifications

    - Contract Drawings
  - Appendix F – SAP and QAPP
  - Appendix G – RIDEM ELUR Template
  - Appendix H – RIDEM Soil and Groundwater Management Plan (SGMP) Template
  - Appendix I – Soil Erosion and Sediment Control Plan
  - Appendix J – Cap Management Plan
  - Appendix K – AEI HASP

Two (2) hard copies will also be provided to each agency, with full-scale Final Design Contract Drawings. These will be hand delivered today to EPA and on Monday to DEM.

Please let us know if there are any issues with uploading the files. We look forward to your comments. Thank you,

Richard G. Kowalski, CPG, LSP, CHMM
Senior Hydrogeologist

AEI Consultants
112 Water Street, 5th Floor
Boston, MA 02109

c. 508.951.3673
f. 857.233.5531
www.aeiconsultants.com

Battaglia, Frank

From: Aaron Ting <ating@aeiconsultants.com>
Sent: Friday, March 30, 2018 8:37 AM
To: Tisa, Kimberly; Battaglia, Frank
Cc: Joseph F Guarnaccia; Stephen Graham; Rick Kowalski
Subject: RE: Revised CMI Work Plan 3-22-2018
Attachments: BASF Cranston Lot 1102 CMI_REVISED Final 032218_Select Pages.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Red Category

As a follow up to yesterday's email, the select CMI Work Plan pages (cover page and pages 3, 5, 8, 24 and 33) that were revised are included in the attached.

Aaron C. Ting, PE
Project Engineer/Project Manager
AEI Consultants
112 Water Street, 5th Floor
Boston, MA 02109
Mobile: 978.577.7138

From: Aaron Ting
Sent: Thursday, March 29, 2018 3:28 PM
To: Tisa.Kimberly@epa.gov; Battaglia, Frank <battaglia.frank@epa.gov>
Cc: 'Joseph F Guarnaccia' <joseph.guarnaccia@basf.com>; Stephen Graham <sgraham@aeiconsultants.com>; Rick Kowalski <rkowalski@aeiconsultants.com>
Subject: Revised CMI Work Plan 3-22-2018

Dear Kim and Frank:

On behalf of BASF, please find a link below to a ftp site which contains the latest Revised CMI Work Plan for the Lot 1102, Cranston, Rhode Island remediation project for your review. The revised version includes the adjusted language related to the Site future use. Hardcopies of the revised pages will be mailed to EPA for next week.

Please let us know if you have any questions. Thanks,

https://aeiconsultants.sharefile.com/d-sbe4c3c33138400e9

Aaron C. Ting, PE
Project Engineer/Project Manager
AEI Consultants
112 Water Street, 5th Floor
Boston, MA 02109

e. ating@aeiconsultants.com
p. 857.350.3519
c. 978.577.7138

f. 857.233.5531
www.aeiconsultants.com

AEI Consultants

March 22, 2018

CORRECTIVE MEASURES IMPLEMENTATION WORK PLAN:
Soil Remedy for Former Production Area (Lot 1102)

Property Identification:

BASF Former Ciba-Geigy Facility
180 Mill Street
Cranston, Rhode Island

AEI Project No. 363655

Prepared for:

BASF Corporation
100 Park Avenue
Florham Park, New Jersey 07932

Prepared by:

AEI Consultants
112 Water Street, 5th Floor
Boston, Massachusetts 02109

Gordon R. Archibald, Inc.
200 Main Street
Pawtucket, Rhode Island

1. Property reuse as open space only.
2. No residential use allowed except as may be approved by the Department as a Recreational Facility for Public Use under the RIDEM remedial regulations.
3. No groundwater uses except as required for remedy monitoring.
4. Operation and maintenance of the surface cover areas and vegetative support as per an EPA-approved O&M plan.
5. Annual reporting to the RIDEM for ELUR compliance.
6. No invasive work below the covered areas is allowed without implementing a RIDEM-approved soil and groundwater management plan and clean soil cover integrity plan (e.g., as may be required for utility maintenance).

Through October 2017, the EPA has received the following comments related to Lot 1102 as part of the public review and comment process:

1. General public: The main comments related to the feasibility of removing the proposed soil quantities from the property and replacing it with clean soil and the truck traffic that the project would generate on the residential streets between the property and the highway, with an elementary school along the way. Specifically, the question was posed whether there is a way to limit the number of trucks and their frequency during school hours.

2. BASF: BASF commented on the feasibility of uniformly removing all PCB-impacted soil greater than 10 mg/kg. Specifically, based on the results of the soil IRM completed in 1995, and subsequent sampling through the 2016 RCRA Site investigation, it is apparent to BASF that the presence of subsurface infrastructure (concrete slabs and foundations) will impede if not limit BASF's ability to achieve the 10 mg/kg remediation goal described in the SOB.

3. RIDEM: RIDEM commented on the fact that its Remedial Regulations require, as a default, that to consider Lot 1102 for future use as a potential recreational facility for public use, and to protect the groundwater resource, the residual PCB content in soil must be less than or equal to 10 mg/kg, but that site-specific remedial objectives may be considered given EPA concurrence.

To address these perceived important considerations, while meeting the remedy objectives, i.e., limit direct contact and mobility metrics while meeting TSCA and RIDEM regulations, **BASF proposed to the EPA and RIDEM the following modifications to the soil remedy presented in the draft SOB on Lot 1102**:

a substrate to support an enhanced upland habitat vegetation landscaping scheme. Finally, the remedy is intended to allow for potential future use of Lot 1102 as open space and parking, as will be defined in an ELUR to be filed with the property deed.

9. A PCB deed notice, required for any area where PCBs remain at ≥1 mg/kg, and an environmental land usage restriction required by the RIDEM and EPA, will be entered into as a joint document, if possible, and will be recorded on the deed as required by the EPA TSCA program and the RIDEM.

BASF is proposing this modified remedial design for the soil component of the remedy under a risk-based approach in accordance with the Toxic Substances Control Act (TSCA), 40 CFR 761.61 (c) and RIDEM Remedial Regulations.

2.0 INTRODUCTION

Given this background information, the following Corrective Measures Implementation (CMI) Work Plan (WP) has been prepared for the BASF Facility, formerly owned by Ciba-Geigy, located at 180 Mill Street, Cranston, Rhode Island. **Specifically, this CMI WP proposes remedial actions for the soil component of the remedy associated with the FPA, designated as Lot 1102 (herein referred to as the "Site").** The groundwater and sediment cleanup objectives are discussed in this document, but further remedial design details for groundwater will be provided in a separate CMI WP, to be submitted to EPA and RIDEM for review and approval. A sediment Operation and Maintenance Plan is presented in this document.

The CMI WP details the remedial design for the Site that is outlined in Section 1. The design is based on the Corrective Measures Study (CMS) completed by BASF in June 2016 and approved by the (EPA) in April 2016 (AECOM, 2016a), the EPA's Draft SOB for the Proposed Remedy Determination dated May 25, 2016 (EPA, 2016), included as **Attachment 1**, all the investigations completed to date at the Former Ciba-Geigy Facility in accordance with the Resource Conservation and Recovery Act (RCRA) Corrective Action Program (RCRA Docket No. 188-1088, EPA ID No. RID001194323), consideration of public comment and scientific rationale, and the results of a human health risk evaluation.

Specifically, BASF is seeking approval from the EPA and the RIDEM for this remedial design for soil under a risk-based approach in accordance with the Toxic Substances Control Act (TSCA), 40 CFR 761.61 (c) and RIDEM's Remediation Regulations, DEM-DSR-01-93.

This design is intended to meet the following remedial action objectives:

a. eliminate direct contact to impacted soil and groundwater; and

- The surface of the Site will be landscaped and vegetated to support a native upland habitat, and because the Site exceeds 1 acre in size this application will meet state/federal Storm Water pollution prevention and erosion control regulations in FEMA Zones AE and Zone X (**Figure 2**).
- The resulting removal and Site restoration will not require the need for warning signage per RIDEM and/or EPA TSCA regulations per 761.61(a)(4) since the PCB levels remaining at the site will contain < 25 mg/kg PCBs. Therefore, no warning signage will be installed along the periphery of the Site after implementation of the remedy.
- At a minimum, fencing will be installed along the river reach to limit river access (e.g., as a safety precaution given the ten-foot drop between ground surface and the water). A security fence around the property is not proposed, though some form of fence demarcating the FPA property boundary will be installed.
- Develop and adhere to a long-term soil management and cover maintenance plan for EPA and RIDEM review.

Groundwater

Details of groundwater-related pilot study and full-scale work plans will be submitted under separate cover.

- Employ ISCO and monitored natural attenuation (MNA) technologies to reduce upland groundwater VOC impacts to meet site-specific and RIDEM GB standards.
- Employ ISCO technology (ozone reactive wall) to reduce or eliminate site-related VOC-impacted groundwater from discharging into the Pawtuxet River, in the southwest corner of the FPA. This will address all VOC mobility considerations.
- While the ozone system is operating in the southwest corner of the property, estimated 3 to 5 years, it will be locally isolated with the installation of a security fence and signage.
- Monitoring wells will be present across the property until such time as groundwater meets applicable regulatory metrics. Unauthorized access to groundwater monitoring wells will be limited by locking, as appropriate.
- Develop and implement a groundwater operation and maintenance plan.

Environmental Land Use Restriction (ELUR)

An ELUR will be imposed on the Site specifying, at a minimum, the following:

- No residential use is allowed except as may be approved by RIDEM as a Recreational Facility for Public Use, or as Open Space under its remedial regulations.
- No groundwater use except as required for remedy monitoring (groundwater is currently classified as GB).

to groundwater considerations. In addition, at a minimum, the soil cover will provide a substrate to support an enhanced upland habitat vegetation landscaping scheme.

9. A PCB deed notice, required for any area where PCBs remain at >=1 mg/kg, and an environmental land usage restriction which includes a soil management plan as required by the RIDEM, will be entered into as a joint document, if possible, and will be recorded on the deed as required by the EPA TSCA program and the RIDEM.
10. In all areas on-site, the 2-ft clean soil cover will be defined as in bullet #7. For soils required to fill excavations that will be below the 2-ft soil cover in areas that are outside the FEMA Floodway, soils stockpiled on-site that contain PCBs <10 mg/kg may be used if included in the TSCA approval and specific soil data supports that the PCB concentrations are <10 mg/kg.

Specific to the 10 mg/kg metric: For all areas defined with PCBs >25 mg/kg, the goal will be to achieve <10 mg/kg at the extent of these excavations, as feasible, in order to minimize the use of impermeable cover material to address leachability issues. Excavations will not extend below the water table (except for the TP-5 area) and may be halted if subsurface obstructions are encountered. If the <10 mg/kg goal is not achieved in an area designated for excavation, that area will be covered with an impermeable HDPE cover material. Areas with PCBs <=25 mg/kg, but >=10 mg/kg will be covered with an impermeable HDPE cover material if there is no concrete slab present to prevent leaching into groundwater. The areas which are anticipated to require the HDPE cover material (Nilex 40 mil HDPE, or equivalent) and/or the geotextile (Mirafi 180N or equivalent) are shown on Contract Drawing C-6. As shown on Contract Drawing C-6, there will be no impermeable cover material installed within the Floodway and the amount of impermeable cover material within Zone AE has been minimized such that there will be no reduction in infiltration which will be documented in the Floodway modelling to be submitted with the Wetlands Preliminary Determination Application.

In summary, where PCBs < 1mg/kg remain - cover with clean soil as defined in bullet #7. Where PCBs >= 1mg/kg and <10 mg/kg remain - cover with cover material and 2 ft clean soil and see bullet #10 for further guidance. Where PCBs >=10 mg/kg and <=25 mg/kg remain - addition of an impermeable cover material, where there does not already exist an in-situ concrete slab, and permeable geotextile and 2-ft of clean soil and see bullet #10 for further guidance. Remove soils with PCBs >25 mg/kg - fill excavations as explained in bullet #10, install cover material (s) as described in bullets 5 and 6, cover with clean soil as explained in bullet #7 and bring to grade as appropriate, all based on the remaining PCB soil concentrations.

Full scale contract drawings, technical specifications and plans for the soil remedial measures are provided in the Remedial Design which is presented in **Appendix E**, and key design elements are reviewed below.

Final landscaping Site wide will be implemented in conjunction with the clean soil cover installation, including in the Floodway. Except, as indicated on the landscaping plans, within the southern portion of the Floodway, no final landscaping measures will be implemented due to the set-up and on-going ISCO ozone pilot program. The final landscaping will be completed following the complete installation of this technology. The Contractor will adhere to the technical specifications about clean soil cover materials, geotextile, final grades and landscaping requirements.

4.2.3 ELUR

An ELUR will be placed on Lot 1102 once remedial activities are complete. The ELUR will specify, at a minimum, the following:

1. No residential use allowed except as may be approved by the Department as a Recreational Facility for Public Use under the RIDEM remedial regulations.
2. No groundwater uses except as required for remedy monitoring.
3. Operation and maintenance of the surface cover areas and vegetative support as per an EPA-approved O&M plan.
4. Annual reporting to the RIDEM for ELUR compliance.
5. No invasive work below the covered areas is allowed without implementing a RIDEM-approved soil management plan and clean soil cover integrity plan (e.g., as may be required for utility maintenance).

A template ELUR is included with this submittal in **Appendix G**. Upon completion of the remedial action and approval by EPA/RIDEM, the ELUR will be prepared, completed and filed with the City of Cranston land evidence records.

The template ELUR also includes a General Soil and Groundwater Management Plan ("SGMP") as Exhibit D in **Appendix H** to address soil in the areas at the Property not inclusive of those requiring a SGMP. Following remedial measures, the SGMP will be prepared and submitted for RIDEM approval and filed with the ELUR.

4.2.4 Groundwater Remedial Approach

Groundwater remedial measures will be required to address the non-compliance with the Remediation Regulations GB soil objectives for VOCs and site-specific VOC MPS non-compliance. The remedial measures include soil mixing ISCO for the SWMU-11 area, installation and operation of an ozone ISCO reactive barrier to address migration of VOCs to the adjacent Pawtuxet River, and long-term verification monitoring. A description of the groundwater VOC remedial measures follows, but as previously mentioned, details regarding the ozone ISCO reactive barrier system